Predictors of depression in the Italian elderly population

Mental health in late adulthood: What can preserve it?

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Predictors of depression in the Italian elderly population

Abstract

Objective: The current research investigates the part played by several socio-demographic factors, lifestyle and cognitive efficiency in predicting self-rated depressive signs in late adulthood. **Methods**: One hundred and ninety-one healthy adults were recruited in Northern Italy and Sardinia — an Italian island located in the Mediterranean sea known for the longevity of its elderly people —from urban and rural areas. Participants were assigned to old (60–74 years) and very old (75–99 years) groups, and were administered cognitive efficiency and self-referent depression measures. **Results:** Gender and region of residence were the best predictors of self-rated depression scores. Furthermore, Sardinian participants, especially those from rural areas, showed better preserved mental health than respondents from Northern Italy. **Conclusions**: Positive aging is more evident in Sardinia, especially in rural areas, where the maintenance of an adequate social status and physical activity help guarantee a positive level of mental health in later life.

Keywords: aging; depression; predictors; mental health; rural; urban

Predictors of depression in the Italian elderly population

Introduction

One of the direct consequences of increasing life expectancy in very late adulthood is the need to ensure an adequate quality of life for elders, and control the effect of those factors that threaten their personal well-being. In this respect, a large body of evidence shows that self-rated depressive symptoms have a negative impact on psychological well-being.

Overall, the literature on the effects of depression on the mental health of non-demented elders living in private households is very extensive, but at the same time the results regarding the rating of the signs of depression in the later life of people living in the community are also controversial. Indeed, there is a relevant consistency among these studies showing a greater prevalence of depressive symptoms among healthy elderly females than males (e.g., Beekman, Copeland, & Prince, 1999; Hybels, Blazer, & Pieper, 2001; Sonnenberg, Beekman, Deeg, & Van Tilburg, 2001). Nonetheless, several authors have not found any gender differences in the prevalence of depressive symptoms, even among very old adults (e.g., Skoog, 1993; Snowdon & Lane, 1995).

Further research reports that being unmarried (single, widow, or divorced) represents a crucial risk factor in the occurrence of depressive signs in people aged 55 years or older (Yan, Huang, Wu, & Qin, 2011).

Moreover, there is evidence that cognitive impairment is associated with depressive symptoms in late adulthood, especially in the very old (i.e., those aged 75 years or over), although at present their temporal relationship is not clear (e.g., Cervilla & Prince, 1997; Paterniti, Taillefer, Dufouil, and Alpérovitch, 2002; Fastame, 2013); that is to say, it is not clear whether the onset of depressive signs impacts on the cognitive efficiency of the elderly or if the loss of the latter favours the occurrence of the former.

Furthermore, a robust body of empirical data shows that the age-related effects impact mainly on the affective status of elders; that is, a rising prevalence of depression is usually found not only in people aged 75–84 years but also among the oldest-old adults (i.e., those aged > 85 years; e.g., Gostynski, Ajdacic-Gross, Gutzwiller, Michel, & Herrman, 2002; Pàlsson, Ostling, & Skoog, 2001). A further crucial finding is that among community-living elders, depression mainly impacts on people with chronic medical illness (e.g., Ostergaard & Foldager, 2011); that is, those individuals developing a personal self-image that must take into account their physical vulnerabilities and fragile status. There is converging evidence that low educational status is associated with a higher level of depressive symptoms, whereas the mental health of well-educated people seems better preserved in this respect, especially females (Ross & Mirowsky, 2006).

In contrast, there are contradictory empirical findings regarding the impact of the environment of residence on affective status in later life. Indeed, according to a genre of research, living in urban areas impacts negatively on mental health (e.g., Carpiniello, Carta, & Rudas, 1989; Ganguli, Mulsant, Richards, Stoehr, & Mendelsohn, 1997), although other evidence stresses that the rates of depressive symptoms are higher among rural residents (e.g., Gao et al., 2009).

In this regard, a recent research on the impact of cultural factors on psychological wellbeing in early and very late adulthood was carried out by Fastame, Penna, Rossetti and Agus (2013). The authors found that Sardinian elders from the inner rural areas showed greater life satisfaction and coping strategies than older people from rural villages located in Northern Italy. According to Fastame et al. this effect can be due to the more active and satisfying life of the Sardinian participants even in later life span, a phenomenon that seems to be related to the high social involvement of the elders in their communities.

Predictors of depression in the Italian elderly population

Since one of the most important aim of the clinical gerontologists is the promotion of an adequate level of mental health in later life, in our opinion it is crucial to investigate the factors influencing the occurrence of depressive symptoms in elderly people. Indeed, although there is no consensus on the prevalence of depressive signs in late adulthood, Beekman et al. (1999) stated that their prevalence in people aged 55 years and over living in the community represents an average of 13.5 % of the population (including major and minor depression). A further study estimates the prevalence of depression in the very old population (> 85 years old) as being 2.7% in males and 4.4 % in females (Steffens et al., 2000). Concerning the Italian elderly population that is the focus of the current investigation, Minicuci, Maggi, Pavan, Enzi and Crepaldi (2002) provided evidence that the overall prevalence of depressive symptoms was 58% in women and 34% in men aged 65 years and older, as assessed by the Centre for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977; Italian version, Fava, 1983). These prevalence indexes stressed the importance of research to explore the predictors of depressive signs in later life, in order to prevent them, if possible.

The current research mainly aimed to investigate whether the inhabitants of the island of Sardinia, noted for their longevity, also show evidence of better preserved mental health, as recent findings seem to suggest (Fastame & Penna, 2012; Fastame et al., 2013). Specifically, our study mainly aimed to:

1) Investigate the part played by several socio-demographic factors (gender, age, marital status, education level), life style and cognitive efficiency in predicting self-assessed affective states.
2) Investigate the impact of gender and aging on depression.
3) Verify whether the occurrence of depressive signs is related to the taking of drugs.

4) Explore whether the presence of depressive signs is influenced by environmental factors.

Although previous findings are partially inconsistent, we expected (as suggested by Djernes, 2006), that age, gender, education level, marital status, the tendency to consume drugs and to spend time on hobbies and the region in which a person lives would predict depression. Moreover, we also expected females to be more depressed than males, and we anticipated greater signs of depression in very old participants than in young elderly people, because of the sedentary lifestyle and greater loneliness of the former. Finally, as recent findings seem to indicate (Fastame & Penna, 2012; Fastame, Penna, Leone, & Puddu, 2011), we anticipated more minor depressive signs among Sardinian participants than among those recruited in Northern rural Italy.

To our knowledge, these hypotheses have not previously been tested in a mixed Italian age sample. In this way, the present study intended to extend previous findings (Carpiniello et al., 1989) by being the first investigation of the effects of environmental factors (region and urbanization) and lifestyle on the mental health of healthy elderly people living in different Italian areas. In our opinion this is a crucial point, because a common bias is the tendency to generalize findings on mental health in late adulthood, ignoring the possible socio-cultural and lifestyle differences characterizing a heterogeneous country like Italy.

Furthermore, at present no data have been collected to investigate if within Sardinia the level of depression is different in distinct rural and urban areas. Specifically, we are aware of emerging findings on the physical well-being and longevity of the population in the province of Nuoro and Ogliastra were part of the current study was carried out (e.g., Poulain, Pes, Grasland, Carru, Ferrucci, Baggio, ... Deiana, 2004), but to

our knowledge, no information was provided on the self-reported mental health in the rural areas surrounding Nuoro. If no differences were found, the preservation of mental health in later life in Sardinia would not depend upon the environmental characteristics of the location where the elders live.

Moreover, if mental health in Sardinia is better preserved than in Northern Italian rural area, this study could open up new lines of research investigating which factors play a crucial role in promoting longevity and mental health. Indeed, we believed that if significant differences had to be found in the depressive symptoms of people living in Northern Italy from those of people on an island like Sardinia, as well as from those in urban or rural areas, this would provide the geriatric psychiatry services with very relevant information on the factors influencing psychological well-being in late adulthood.

Method

Participants

One hundred ninety-one healthy adults living in private households took part in the study voluntarily. Participants were respectively assigned to two groups aged between 60 and 74 years (Old Group) and between 75 and 99 years (Very Old Group). They were recruited from rural areas of Lombardy in Northern Italy and the Italian island of Sardinia, which is known for the exceptional longevity of the oldest-old inhabitants (Caselli & Lipsi, 2006).

Specifically, participants were recruited both from several Sardinian villages (defined as settlements with < 3,000 population) of Barbagia and Ogliastra, where a very simple agro-pastoral lifestyle and low income rate prevail and from the city of Sassari, which is the second bigger urban center of the isle in terms of population density (defined

as ±130,000 population) and wealth. A further sample was recruited in the rural areas of Lombardy (i.e., Northern Italy), which are characterized by a very simple life style similar to that of the Sardinian villages. Barbagia is the Sardinian central inner area surrounding the Gennargentu mountain in the province of Nuoro, whereas the villages of the province of Ogliastra are in the central-eastern part of the isle, surrounding the Idolo mountain. The respondents were recruited from Sardinia and Lombardy because an emerging body of evidence shows a higher prevalence of centenarians in the Mediterranean isle and a greater level of psychological well-being, especially in Ogliastra, compared to Lombardy (Fastame & Penna, 2012; Fastame et al., 2013).

In order to be selected, participants had to be native-born, permanent residents of the city of Sassari or of the villages of Barbagia, Ogliastra or Lombardy. Furthermore, the participants had to be descendants of people originally from those areas for at least two generations, and had to show no signs of cognitive decline as assessed by the Mini-Mental State Examination (MMSE; Folstein, Folstein, & McHugh, 1975) and vocabulary subtest of the Wechsler Adult Intelligence Scale Revised (WAIS-R; Wechsler, 1974; Italian version, Orsini & Laicardi, 1997). A score below 24/30 on the MMSE was the main criterion used to exclude cognitively impaired participants.

Table 1 presents the details of the socio-demographic characteristics of the whole sample.

[Please insert Table 1 about here]

Gender ($\chi 2 = .43$, df = 1, p = .51) and education level (i.e., 3-8 versus > 8 years) ($\chi 2 = .13$, df = 1, p = .72) were counterbalanced across the age groups.

Materials and procedure

Each participant was presented the following instruments:

1) a preliminary interview (Fastame & Penna, 2012) that was carried out to collect information on socio-demographic characteristics and lifestyle (e.g., marital status, hobbies, time spent in leisure activities each week) of each participant.
2) The Mini-Mental State Examination (MMSE; Folstein et al., 1975) is composed of 30 items that assess general cognitive efficiency in terms of spatial-temporal orientation, visual–motor integration, short and long-term memory, attention and mental calculation respectively. A score ≤ 23 was used as a cut-off to exclude participants with mild or severe cognitive decline.
3) The vocabulary subtest of the Wechsler Adult Intelligence Scale–Revised (WAIS-R; Wechsler, 1974; Italian version, Orsini & Laicardi, 1997) is a measure of semantic memory, which requires the respondent to refer to the meaning of 35 items. Scores assigned to each word definition range from 0 to 2, according to its correctness. The more exhaustive the definition of the noun presented, the greater the score assigned to it, such that the maximum total score is 70. The WAIS-R was administered as a control measure for the efficiency of verbal crystallized intelligence.
4) The Centre for Epidemiological Studies of Depression Scale (CES-D; Radloff, 1977; Italian version, Fava, 1983) consists of 20 items assessing depressive symptoms experienced during the past week on a four-point Likert scale (from 0, *never or rarely* to 3, *most days or every day*). It follows that the maximum total score is 60, while a score of 16 or higher is used as the Italian cut-off to

diagnose the presence of depressive signs. The internal consistency of this tool is expressed by a Cronbach's alpha of .64 in this sample.

All the participants were tested individually in their own home. To avoid the fatigue effect, the experimenter read aloud the statements on each questionnaire then wrote down the answer given by the respondent on the corresponding response sheet.

Each experimental session lasted about 40 minutes.

Results

Table 2 illustrates the main characteristics of the participants' lifestyle.

[Please insert Table 2 about here]

The assumption of medications, which is a dichotomy variable (i.e., *yes* vs. *no*) being used as a measure of physical health was not counterbalanced across the residents of the urban and rural villages ($\chi 2 = 66.33$, df = 3, $p < .0001$), showing that participants from the city of Sassari used less medicines than the other three groups. Unlike participants from Barbagia ($\chi 2 = .41$, df = 1, p = .52), the greatest part of elders from Sassari ($\chi 2 = 4.57$, df = 1, p = .033), Ogliastra ($\chi 2 = 34.78$, df = 1, $p < .0001$) and Lombardy ($\chi 2 = 7.68$, df = 1, p = .006) were involved in carrying out some hobbies.

Then, a 2 (Old vs. Very Old age group) X 4 (residence: Sassari, Barbagia, Ogliastra versus Lombardy) analysis of variance (ANOVA) was carried out on the self-rated depression measure. The main effects of age group [$F(1,183) = 8.74$, $p = .004$, $\eta p^2 = .046$] and residence [$F(3,183) = 21.68$, $p < .0001$, $\eta p^2 = .26$] were significant. The interaction age group X residence was not significant [$F(3,183) = 1.87$, $p = .14$]. Old group was less depressed (M = 12.44, SD = 9.15) than the Very Old group (M = 15.46,

SD = 10.6). Tukey's post hoc comparisons revealed no significant differences between elders from Ogliastra (M = 8.96, SD = 9.79) and Barbagia (M = 10.82, SD = 6.7). Participants from Lombardy showed the most evident signs of depression (M = 21.7, SD = 11.9) compared to the further three groups ($p \leq .005$), whereas participants from the city of Sassari presented greater depression scores (M = 15.4, SD = 4.9) than older people from Ogliastra (p = .004).

A further ANOVA was carried out to explore the effect of residence (: Sassari, Barbagia, Ogliastra vs. Lombardy) and having one or more hobbies (i.e., *yes* vs. *no*) on the CES-D measure. Apart from the significant main effect of residence described earlier, there was the main effect of hobbies [$F(1,183) = 4.36$, $p = .038$, $\eta p^2 = .023$], whereas the interaction between residence and hobbies was not significant [$F(3,183) = 2.27$, $p = .08$]. As expected, people involved in leisure were significantly less depressed (M = 13.23, SD = 9.8) than more sedentary participants (M = 15.61, SD = 10.3).

Then an ANOVA was carried out to explore the effect of gender on CES-D measures. As expected, the main effect of gender was significant [$F(1,183) = 16.98$, $p < .0001$, $\eta p^2 = .085$], that is, females showed greater signs of depression (M = 16.28, SD = 10.8) than males (M = 11.47, SD = 8.45).

Since no significant differences in terms of depression scores were found between the elders recruited in the Sardinian rural areas, a single sample was randomly extracted from Old and Very Old participants resident in Barbagia and Ogliastra. Then, a backward stepwise linear regression analysis performed by Ordinary Least Squares estimation was carried out to investigate the impact of several socio-demographic factors, lifestyle and cognitive efficiency on depressive symptoms in the Italian elderly rural sample. Specifically, in this analysis the factors of gender, age (i.e., years), marital status (i.e., single/widow vs. married/engaged), assumption of medication (i.e., *yes* vs. *no*), carrying

out hobbies (i.e., *yes* vs. *no*), region of residence (Sardinia vs. Lombardy), as well as MMSE scores were used as predictors, whereas CES-D was fitted as the dependent variable. Table 3 illustrates the outcomes.

[Please insert Table 3 about here]

Finally, considering the sample used to carry out the above mentioned regression analysis, an ANOVA was carried out to quantify the effect of Region (i.e., Sardinia vs. Lombardy) on the CES-D scores of the participants recruited in the rural areas. As expected, the main effect of Region was significant [$F(1,93) = 16.75$, $p < .0001$, $\eta p^2 = .15$], that is, participants recruited in Lombardy showed significantly greater signs of depression (M = 21.29, SD = 12.1) than those recruited in Ogliastra and Barbagia (M = 12.29, SD = 9.31).

Discussion and Conclusions

The major goal of the present research was to investigate the part played by several socio-demographic and environmental factors, and lifestyle and cognitive efficiency measures in predicting perceived depressive signs in old and very old adults. A further goal was to study the effects of gender, environmental and age-related factors on depression in the Italian elderly population.

Overall, the present outcomes have confirmed and extended previous findings (e.g. Fastame et al., 2013) and opened up new perspectives on the study of depressive symptoms within a heterogeneous socio-cultural context, such as the Italian one. Moreover, from a clinical perspective, the current research is relevant in that it provides

useful information about factors that impact negatively on mental health in later life. Indeed, a very crucial emerging finding is that within the analyzed Italian scenario, 26% of variance in self-rated depressive signs in later life is explained by gender and region of residence. Specifically, the current findings are consistent with and extend previous studies regarding the predictors of mental health in community elderly people (for a review see Djeners, 2006) and recent research on perceived well-being in elderly people (e.g., Fastame et al., 2013) showing that Sardinian older people show lower depressive symptoms and higher personal satisfaction and coping strategies than the normative.

Overall, a very relevant outcome that emerged from the current study is the effect of region of residence on self-rated depressive signs. That is, the Sardinian context seems more adequate for preserving mental health in later life. In contrast, the elders resident in the agro-pastoral areas of Northern Italy showed higher and more critical levels of depression (mean CES-D scores > 21) compared to the participants recruited from Sardinia. In our opinion, these outcomes can be justified by a complex pattern of concurrent causes that deserve to be studied in depth in future. First, compared to residents in the rural Sardinian area of Ogliastra, showing the lowest depression scores (i.e., mean CES-D scores < 9), participants from the agro-pastoral villages of Lombardy were less involved in physical activity that is known to preserve well-being in late adulthood (e.g., Chodzko-Zajko et al., 2009). A further relevant factor is the impact of the attitude of youth on the self-esteem and affective status of the elders; this is very relevant if one considers that late adulthood represents a developmental stage that is usually wrongly thought of as being characterized by loss rather than gains (Baltes & Staudinger, 2000). In our opinion this is very significant because, as several authors have suggested (e.g., Brilman & Ormel, 2000; Cervilla & Prince, 1997; Martin, Leary, & Rejeski, 2000), the lack of or lower level of perceived emotional support from young people contributes

widely to the onset of depressive signs in later adulthood. Concerning this aspect, a short interview was carried out at the end of the experimental session only with participants from rural areas of Ogliastra and Lombardy in order to investigate how they perceived themselves within their social network. We found that the elderly people from Lombardy perceived that they had a lower social status than participants from Ogliastra ($\chi 2 = 4.77$, df= 1, p = .037); that is, the former group believed that according to their experience, the younger generation does not sufficiently respect elders, whereas people from Ogliastra stated that they were adequately respected and that this was even enhanced in their social context. Hence, as a body of research suggests, the greater self-perceived respect of the Sardinian old people could reflect the dominance of a collectivist culture, such that the elders are perceived as the repository of local knowledge and cultural values (Eller, 2011; Fastame et al., 2013). Moreover, as pointed out by Carpiniello et al. (1989), Sardinian old people who live in rural areas "are more likely to have an available social network nearby" (p. 449) and a more supportive environment than people living in the urban areas. This would explain the lower CES-D scores of people living in Sardinian rural areas, compared with participants from the city of Sassari.

In addition, the higher level of mental health of the elderly people recruited in the urban areas of Sassari seems to be the direct consequence of a combination of factors, such as their higher wealth level and physical health (assessed in terms of very limited use of drugs), the possibility of utilizing mental health services easily, and their sustained social, recreational and cultural activities – in short their adequate quality of life (e.g., Ganguli, Mulsant, Richards, Stoehr, & Mendelsohn, 1997; Ostergaard & Foldager, 2011).

A further finding of the current study, which is in agreement with those of Hybels et al. (2000), Minicuci et al. (2002) and Sonnenberg et al. (2001), is that depressive symptoms are more evident in females than in males.

Moreover, in agreement with a robust body of evidence suggesting that aging impacts negatively on affective status in late life (e.g., Gostynski, et al., 2002; Pàlsson et al., 2001), our very old participants showed greater depressive signs than the younger elders.

But one of the most interesting findings of the current study is the partial effect of urbanization on self-rated depression. Indeed, our outcomes are in agreement both with the controversial studies suggesting that depressive signs are more evident in elders from urban areas (e.g., Carpiniello et al., 1989; Ganguli et al., 1997) and also with the research showing higher depressive scores for community elderly people resident in rural contexts (e.g., Gao, et al., 2009). Indeed, as already pointed out by Carpiniello et al. (1989), the lifestyle of the Sardinian rural areas seems to preserve mental health into late adulthood, favoring the social supports. Indeed, according to the authors, urban social relationships are more superficial and related to people's occupations and interests and lack a strong emotional dimension. In contrast, in rural areas social networks provide a stronger social and emotional support to elders; hence, older rural residents cope better, even with external family relationships.

Moreover, even people living in the Sardinian urban area of Sassari showed lower depression scores than elders from the rural areas of Lombardy. Overall, current outcomes extend previous findings (Carpiniello et al., 1989; Fastame et al., 2013), suggesting that the Sardinian context seems to favor the maintenance of adequate levels of mental health in late adulthood. In this regards, it needs to be stressed that the CES-D

scores of our participants from rural Lombardy indicated evident signs of depression in Northern Italian participants.

Overall, the current findings enable us to stress that in order to improve the quality of later life and limit major psychopathological problems such as depression – especially in the rural areas of Lombardy – it is necessary to implement an individualized psychosocial intervention aimed at empowering and preserving the self-image and self-esteem of the elderly.

Nonetheless, the literature shows extensively that that there are additional risk factors with complex interrelationships explaining the high prevalence of depressive symptoms in later life that were not explored in the current study. For instance, we did not investigate the impact of alcohol abuse or sleep disturbances, whether there is a familial predisposition to have anxiety, neuroticism or mood disorders, whether particular stressful events had recently affected their personal dimension (e.g., occurrence of a cancer) and when they had occurred. A further limit of our study is that it did not investigate the effect of ethnicity on the mental health of the elders. Indeed, in the USA, depressive signs are more evident in Hispanic elderly people than among Caucasians (e.g., Swenson, Baxter, Sherrerly, Scarbro, & Hamman, 2000). Our participants were all Caucasians, because in the Italian scenario migration flows from Africa, Eastern Europe and Asia are a very recent phenomenon, and they are even absent in the inland rural areas such as in Ogliastra. Besides, it is necessary to be cautious in generalizing the present outcomes, given the heterogeneity of the Italian socio-cultural context and the fact that data were collected only among community elderly people. Indeed, it could be argued that in a different cultural environment (e.g., metropolitan areas) or environmental context (housing within institutional care services), the mental health level of elderly

people would be influenced by further factors tied to the lifestyle (e.g., social relationships, nutrition, stressful events) and changes in demographic and social structures (e.g., cohabitation with caregivers coming from poorer countries).

In conclusion, assuming a multifactorial perspective the current study suggests that the impact of social, cultural, environmental and lifestyle factors in favoring the maintenance of an adequate level of mental health in late adulthood should be investigated further. Therefore, future research should investigate carefully whether the present results can be generalized to further contexts that are culturally different from those in which the current study was carried out, in order to focus on those factors threatening or favouring quality of life in late life. This would provide very useful information for geriatric services in the implementation of specific interventions promoting the maintenance of adequate levels of well-being and minimizing the impact of negative factors on self-esteem and self-perceived cognitive functioning in later life.

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Table 1: Socio-demographic characteristics and cognitive efficiency (MMSE, Mini-Mental State Examination) mean scores collected from all the participants of the study. SD denotes standard deviation scores. Data are distinguished by age group (old and vVery Old) and geographical origin of the participants (Sardinia versus Lombardy)

		Old Group (60-74 years)	**Very Old Group** (75-99 years)	$\chi 2$	**df**	**p**
Sassari	**n**	24	13	3.27	1	.07
	gender			.027	1	.87
	males	13	6			
	females	11	7			
	Age (years)	M = 67.4 (SD = 4.1)	M = 80.6 (SD = 5.3)			
	Mini Mental State Examination	M = 26.96 (SD = 1.6)	M = 26.4 (SD = 1.5)			
	Education (years)	*Males Females*	*Males Females*			
	3-8	3 4	2 1	.48	1	.49
	> 8	10 7	4 6	.89	1	.34
Barbagia	**n**	25	36	1.98	1	.16
	gender			.024	1	.88
	males	13	12			
	females	12	18			
	Age (years)	M = 69.9 (SD = 3.2)	M = 85 (SD = 3.9)			
	Mini Mental State Examination	M = 26.6 (SD = 1.4)	M = 27.8 (SD = 1.5)			
	Education (years)	*Males Females*	*Males Females*			
	3-8	7 6	7 10	.47	1	.49
	> 8	6 6	11 8	.18	1	.67
Ogliastra	**n**	23	23	0	1	1

	gender			.78	1	.38
	males	11	9			
	females	12	14			
	Age (years)	M = 69.6 (SD = 2.7)	M = 81.8 (SD = 5.9)			
	Mini Mental State Examination	M =27.1 (SD = 1.4)	M = 27.7 (SD = 1.4)			
	Education (years)	*Males Females*	*Males Females*			
	3-8	4 6	5 8	.006	1	.94
	> 8	7 6	4 6	.43	1	.51
Lombardy (Northern Italy)	**n**	24	23	.021	1	.88
	genre			.022	1	.88
	males	12	11			
	females	12	12			
	Age (years)	M = 70.7 (SD = 2.3)	M = 84.6 (SD = 5.2)			
	Mini Mental State Examination	M = 26.7 (SD = 1.8)	M = 26.4 (SD = 1.5)			
	Education (years)	*Males Females*	*Males Females*			
	3-8	6 6	5 6	.05	1	.83
	> 8	6 6	6 6	0	1	1
	Total per age group	**96**	**95**	**.005**	**1**	**.94**

Table 2: Characteristics of lifestyle of old and very old people living in urban and rural areas of Sardinia and Northern Italy (Lombardy) expressed in terms of frequencies of occurrence

		Sardinia		Northern Italy
	Sassari **(urban)**	Ogliastra **(rural)**	Barbagia **(rural)**	Lombardy **(rural)**
Old Group (60-74 years)				
medication				
YES	2	15	11	15
NO	22	8	14	9
hobbies				
YES	14	23	18	16
NO	10	0	7	8
Type of hobbies				
none	10	0	7	8
sport	5	2	1	2
cultural/social	9	21	17	14
Hours/week for hobbies				
0	10	0	7	8
1-5	13	7	10	4
>5	1	16	8	12
Farming				
YES	--	18	7	0
NO	--	5	18	24
Very Old Group (75-93 years)				
medication				
YES	3	20	30	21
NO	10	3	6	2
hobbies				
YES	11	20	15	16
NO	2	3	21	7
Type of hobbies				
none	2	3	21	7
sport	3	3	1	1
cultural/social	8	17	14	15

Hours/week for hobbies				
0	2	3	21	7
1-5	11	12	8	4
>5	0	8	7	12
Farming				
YES	--	16	9	18
NO	--	7	27	5

Table 3: Predictors of self-reported measures of depressive symptoms (CES-D) using age, gender, region, marital status, leisure (yes vs. no), and Mini-Mental State Examination (MMSE) scores as independent variables. Table 3 displays only the significant variables impacting the depression measure.

Variable	*n*	*Predictor*	R^2 *corrected*	β	*t*	*p*
CES-D	95	Gender	.14	.32	3.28	.001
		MMSE		-.26	- 2.68	.009
		Gender	.26	.29	3.16	.002
		Region		-.40	- 4.10	< .0001